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Motivations to Contract Cheat in Higher Education: a Pre-COVID Pre-ChatGPT Pilot Study

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ABSTRACT

CONTEXT

The term “contract cheating” describes the form of academic dishonesty where students get academic work completed on their behalf, which is submitted for academic credit as if they had created it themselves. Normally it is presented as an entirely original piece of work, and is unlikely that it will be detected using standard anti-plagiarism text matching software. This is also present in students using generative AI software to complete their assessments.

PURPOSE OR GOAL

The aim of this pilot study is to understand why student “cheat” by outsourcing their assignments and exams. We also posed several hypotheses to be tested. We wanted to know if the value of higher education has changed from a transformative to a transactional perception. Additionally, we asked if student “fear” is the most dominating factor leading to transactional perception of higher education driven by self, parental, cultural, societal expectations, and whether the ease of access and low cost has increased its appeal.

APPROACH OR METHODOLOGY/METHODS

A qualitative exploratory approach is adopted to allow flexibility to tap the expected richness of data. The method of data collection is via one-to-one semi-structured interviews supported by a structured questionnaire. Interviews of about 10-15 minutes of 80 students has been chosen as the central instrument, with 58 valid responses. The data was collected during August 2018.

ACTUAL OR ANTICIPATED OUTCOMES

We found within the cohort that the main drivers for motivation to cheat are poor time management and low self-efficacy, however we noted that fear (of failure) is not a direct motivator for cheating, and that students generally value higher education in both transformative and transactional ways. We found slight influence from cultural background and financial dependency in the international cohort and/or those who grew up outside of Australia. We did not find ease of access and low cost has increased the appeal of contract cheating. There was a small cohort who may consider engaging in contract cheating services despite knowing that it is unacceptable and in breach of university policy.

CONCLUSIONS/RECOMMENDATIONS/SUMMARY

Addressing contract cheating requires a multifaceted approach. Educational interventions, such as promoting academic integrity through coursework and workshops, have shown some efficacy in reducing contract cheating incidents. Creating a culture of academic honesty and emphasizing the value of learning over grades can also influence student behaviour.

KEYWORDS

Academic integrity, contract cheating.

Introduction

The term “contract cheating” was first proposed by Lancaster & Clarke (2006) at Birmingham City University as “the outsourcing of student work to third parties” (Lancaster & Clarke, 2015). It describes the form of academic dishonesty where students obtain academic work completed on their behalf, which is submitted for academic credit as if they had created it themselves. Often contract cheating involves the payment of a fee to a third party in the form of outsourced work agreements, but it can also be unpaid. Normally it is presented as an entirely original piece of work and is unlikely that it will be detected using standard anti-plagiarism text matching software. This is also present in students using generative AI software to complete their assessments. Contract cheating has been identified as a serious issue for academic institutions as assessment has been specifically written for the student and therefore cannot be detected by conventional anti-plagiarism methods (Clarke & Lancaster, 2006) however published research into the practice remains limited (Mahmood 2009). Clarke and Lancaster (2006) classify contract cheating into four categories: auctions sites, discussion forums, essay mills, and feed aggregators – and list several contract cheating websites that fall into each category (Clarke & Lancaster, 2007a). Mahmood states students may contract known colleagues to complete assessment on their behalf (Mahmood 2009). Mahmood (2009) found that, unlike online and traditional forms of plagiarism, relatively little has been published on contract cheating (Ahsan et al, 2022) while noting major work in Australia by Bretag et al (2019a; 2019b), Newton (2018), and Kong et al (2016). The majority of published literature focuses on contract cheating in computing studies; however, this may reflect the academic disciplines of key authors rather than the actual prevalence within disciplines. Initial analysis of the contract cheating market has been conducted, yet significant opportunity for additional economic analysis and modelling remains (Rigby et al, 2015). Additionally, several studies propose reasons for contract cheating; however, these suggestions require further verification through interviews with students and behavioural analysis (Rigby et al, 2015; Walker & Townley, 2012). Finally, various methods have been suggested to prevent and detect contract cheating, including replacing assignments with unseen examinations and regularly monitoring known contract cheating websites for bidding requests.

Scope of the problem

Clarke and Lancaster conducted the first quantitative analysis of contract cheating by monitoring a key contracting site, RentACoder, for three weeks in March 2005 and found that 12.3% of bid requests were for contract cheating (Clarke & Lancaster, 2006, Lancaster & Clarke, 2007a, 2007b) and also conducted analysis on users who had been identified as placing a contract cheating bid request (Lancaster & Clarke, 2007b). This secondary analysis also shows significant evidence of habitual use by the same users. Furthermore, almost 10% of users posted over 25 requests, suggesting agency use. The study also found that the vast majority of contract cheaters were computing students from Western nations such as the United States of America and United Kingdom. Lancaster & Clarke (2006; 2007a; 2012) also analysed bids on EssayBay, a commercial website for contracting assignments, however this study focussed on assessing the level of traceability of bids, rather than the size of the market. Although contract cheating may be well-suited to computing studies and therefore constitute the majority of contract cheating, it is also possible that contract cheating in other disciplines may be prevalent but has not been detected or quantified. Further work is required to understand the size and breadth of the contract cheating market across disciplines, as well as the demographics of users and suppliers.

The contract cheating industry: the market and economic behaviour

As contract cheating is based on the existence of a suitable market, research from an economic perspective is valuable in understanding the practice. Jenkins & Helmore (2006) used a case study approach to understand the process of contract cheating by engaging a student to place bid requests for an elementary computing class. The process was found to generate quality work at a low cost, and the student evaded detection. Several quantitative studies have been conducted, for example an analysis of contract cheating requests on Freelancer.com and

Transtutors.com by Wallace et al (2014) which found that that supply significantly exceeded demand, with an average of 10 contractors responding to every request of contract cheating. Additionally, Clarke & Lancaster (2013) analysed over 14,000 contract cheating attempts using online agencies to assess the monetary value of contract cheating to various parties involved in the process. The most in-depth economic analysis has been performed by Rigby et al (2015), who conducted hypothetical discrete choice experiments with university students to assess willingness to pay for contract cheating. The study found that willingness to participate and valuation were higher in risk-preferring students, students who spoke English as an additional language and students expecting lower grades; yet declined with increased chance of detection and severity of penalties. While this economic approach is promising, further research is necessary to validate these findings under different conditions and to investigate the role of information asymmetry in the market.

Student perceptions and reasons for contract cheating

Understanding students' perceptions of, and causal factors behind contract cheating is essential to addressing the practice. Mahmood (2009) surveyed students' knowledge and perceptions of plagiarism and found that students' perceived knowledge was higher than their capacity to recognise plagiarism. Although this study referred to contract cheating and essay-mills, it was not clear whether students were explicitly surveyed on their knowledge of contract cheating as a form of plagiarism. As contract cheating is arguably less accidental than other forms of plagiarism, specific research is required to gauge student perceptions of contract cheating, as well as their identified reasons for committing the practice. Due to the dearth of student perceptions studies in the literature, inferences have been made by several authors. Clarke & Lancaster (2007) suggested that two key reasons for contract cheating are ease of access and low cost, yet these factors may be most consequential if a student has already decided to undertake cheating behaviour. Walker & Townley (2012) considered underlying reasons for contract cheating, such as poor academic skills, external pressure and education costs, as well as more structural issues of inadequate admission criteria and the globalisation of the education system.

Suggested solutions: prevention and detection

A significant focus of studies on contract cheating is the proposal of solutions for preventing and detecting contract cheating (Harper et al 2021), proposed predominantly by university academics who have presumably noticed contract cheating in their teaching subjects and wish to warn colleagues of the issue. Lancaster & Clarke (2006; 2012) suggested regular monitoring of known contract cheating websites and agencies using text analysis; however, the effectiveness of this approach depends on the availability of resources for regular monitoring and is limited by low traceability rates. Other authors focused on monitoring the submitted work itself, as assessment which has been contracted may use distinct techniques and styles, have unexpectedly high levels of English expression, or contain misrepresentations in referencing (Jenkins & Helmore 2006; Rogerson 2014). While suggestions have also been made to increase the traceability of assessment through setting original or individualised assignments, this approach also increases workload for staff and may not always be feasible (Lancaster & Clarke, 2012). Due to the difficulty of detecting unique work, several authors suggested focussing on prevention (Walker & Townley, 2012; Wallace et al, 2014). However, Wallace et al demonstrated that reducing turnaround times for assignments was ineffective at deterring contract cheating, as the market had significant capacity to accommodate short turnaround times (Wallace et al, 2014). Several authors proposed using unseen examinations rather than assignment-based assessment (D'Souza et al 2007; Lancaster & Clarke, 2007b; Page, 2006). However, this approach possesses limitations as assessment under exam conditions is not always feasible and appropriate for certain subjects and disciplines. Two contrasting approaches are to use viva voce, or require students to complete logbooks which detail the progress of their work and are checked by staff at regular intervals (Lancaster & Clarke, 2007b; Mahmood, 2009). Finally, introducing an honour code and implementing a mentoring system to build student confidence have also been proposed as more indirect methods of preventing contract cheating (D'Souza et al, 2007; Lancaster & Clarke,

2007b). Additional investigation is required into all of the proposed methods to assess feasibility and effectiveness in preventing and detecting contract cheating.

This literature review has highlighted the importance of understanding the reasons why students engage in contract cheating. Published studies have largely focused on describing the issue of contract cheating and proposing solutions to deter or detect the practice. Several studies have begun to gain understanding of key issues, such as the size of and economic qualities of the market, as well as student perceptions and reasons for contract cheating. However, these studies highlight the extent of additional research that remains to be conducted. The review has also highlighted that smaller qualitative studies offer valuable insights into the practice and could be conducted by drawing on academics' own teaching experiences and conversations with students. This will be the approach and focus of our study.

Methodology and Methods

As the study aims to examine the reasons why students would engage in contract cheating, a qualitative exploratory approach is adopted to allow flexibility to tap the expected richness of data. The method of data collection is via one-to-one semi-structured interviews supported by a structured questionnaire. For this paper, we termed it as an "survey". Interviews of about 10-15 minutes of 81 students has been selected as the central instrument. The data was collected during August 2018. The interviewer is a research assistant who is not a university staff, to address concerns regarding power imbalance which may affect or create bias in the responses from students. The answers were then thematically analysed by the research assistant to form the numerical tally (coded) based on key themes, and the resultant outputs were reviewed by the authors to refine the themes. No software was used for the coding, and was performed by the research assistant. Ethics were approved at UniSQ under H16REA243 Understanding the motivations for contract cheating. The aim of this pilot study is *to understand why student "cheat" by outsourcing their assignments and exams.*

We also posed several hypotheses to be tested:

1. The value of higher education has changed from a transformative to a transactional perception
2. Is student "fear" the most dominating factor leading to transactional perception of higher education driven by self, parental, cultural, societal expectations
3. The extent of influence by factors are influenced by:
    a. Cultural standard, tolerance, and interpretation of cheating
    b. Discipline specific or Language proficiency factors
    c. Fear and costs of failure (self-inflicted; cultural shame; financial hardship)
4. The ease of access (technology and social media) and low cost has increased the appeal of contract cheating
5. Is there any difference between domestic and international students in terms of reasons to cheat

Results and Discussion

The survey result is segmentized into 2 parts: cohort description and questions. The surveys were deployed at our Toowoomba and Springfield campuses by a research assistant not involved with normal academic or teaching duties. The gender of the cohort is roughly equal, with 56.8% male and 43.2% female aged between 18 to 30. There were no non-binary participants and/or those who did not identify. We also did not identify whether the participants were online/external or on-campus students but we will assume the cohort interviewed are on-campus students. The field of study is broadly distributed from Health, Arts, Business, IT, Law, Education, to Engineering and the Sciences, and most participants were undertaking undergraduate programs. The participants were predominantly domestic students at 72.8%, and international students were

broadly geographically spread mostly from Asian countries, with a small number from Africa, Middle East, and the Pacific. Most participants' English proficiency were good to excellent levels.

The main reasons for university studies were predominantly employment/career related, and to a lesser extent life-long learning aligned with personal interests were also featured. Becoming more intellectual (or smarter) and family expectation were also reasons for going to study at university. This result seems consistent with the UniSQ cohort majority, who are matured aged and/or working while studying, and first-in-family at university. This result suggests that our hypothesis that the value of higher education has changed from a transformative to a transactional perception is false. Students study because they want a better job but conversely, they want to better themselves in that higher education is perceived as both transformative and transactional.

Students were asked about their concerns or fear of failing their courses they are studying. Interestingly, one would expect that it would be 100% on the affirmative, but there were 28.4% responses that did not have any fear and/or did not care whether they fail or not. This response is significant in exploring our hypothesis that student "fear" the most dominating factor leading to a transactional behaviour which could be driven by self, parental, cultural, and societal expectations. It is hypothesised that if students are not fearful of failing, then there is less motivation to cheat, however the result challenges our preconception about student perceptions of failing assessments.

The top two reasons by frequency count for students failing are "poor time management", and interestingly, "self-confidence (lack of) and fear of failure" (Table 1). The "fear of failure" in the form of self-efficacy or confidence theory in learning (Bandura, 1977) as a cognitive barrier should be explored further. Further to that, academic preparedness and apathy/procrastination were also prominent in reasons for failing academically. It is common to associate academic preparedness and study habits as influencing factors for academic success, however psychological preparedness could also be significant contributors to academic success. Our cohort seems to be academically prepared based on their responses. Several factors drive students to contract cheating. These include academic pressure, lack of time management skills, and a desire for higher grades (Lancaster & Clarke, 2016). Additionally, cultural factors, such as prevailing attitudes towards education and competition, may influence student decisions to cheat (Bretag et al., 2018). It is suggested in this pilot study that factors such as time management and self-efficacy are influencing drivers for motivation to cheat.

Table 1: Reasons for failing and failure to act

Reasons for Failing (multiple responses)	**Frequency (n=58)**	**Failure to act (multiple responses)**	**Frequency (n=58)**
Academic Unpreparedness	24	Employ a tutor	3
Poor time management skills	30	Form a study group	16
Fear of Failure and lack of self-confidence	29	Talk to my lecturers/tutors	31
Cultural shame	4	Talk to my (student) peers	43
Laziness	17	Study	44
Apathy and Procrastination	22	Study a lot	40
Reliance on others	4	Other	7
Lack of desire	4	Missing Data	3
Financial hardship	2		
Other	8		

About 47% of the participants were aware of other students using contract cheating services, with 33% being unaware of cheating activities but know of the existence of service providers, with another 20% unaware of both cheating activities and the service providers, and that most were

unsure on how to access and use these services. Despite the enabling of online technology, social networks. and ease of connectivity, it challenged our hypothesis that the ease of access (technology and social media) and low cost have increased the appeal of contract cheating. It is however noted that despite not knowing much about contract cheating services, about 25% of the participants seek to find out about the fees that these services charges.

This behaviour seems to reinforce the transactional perception in that there is a pragmatic consideration between time required (to complete the assessment) and financial costs (of the contract cheating service). Prior research indicates that contract cheating is widespread across various academic levels and disciplines. Studies by Clarke and Lancaster (2006) and Newton (2018) suggest that a significant proportion of students have engaged in or considered contract cheating using online platforms and essay mills. However, our findings support recent anecdotal commentary that contract cheating is not as prolific as first feared. Academic cheating is not new and has been around for centuries, whether it is facilitated between family members and friends, or through an online intermediary paid or unpaid, and now empowered with powerful technology in the form of generative AI, it has always presented challenges for assessment designers and engineering educators.

It is of no surprise that participants responded that there was no intention to engage in contract cheating in their studies, however there were a small cohort (7.4%) that may consider that option. The reasons for this were complex and somewhat contradictory, in that participants knew it is the wrong thing to do, however if needed it is one of the options that could be considered. Our result suggests that willingness to pay is variable and dependent on individual risk appetite to engage such services, their personal values and cultural background, ability to pay, and tolerance to failing. There is some evidence to suggest that cultural background and financial costs (of their studies) featured more prominently as drivers for motivation to cheat in international student cohort and/or those who grew up outside of Australia. The tolerance for failure also seems much lower in this cohort. We did not observe any significant variance in responses between the various disciplines nor language proficiency.

AI and its role in post-COVID, post-ChatGPT era with respect to contract cheating.

The emergence and subsequent rapid development of generative artificial intelligence (GenAI) left educators and students in a whirlwind in late 2022 (Wu et al, 2023). Within higher education, educators were scrambling to try and find ways to detect the use, and students battling with the ethical use of the new technology. Since its emergence, policies around the use of GenAI have been changing all over the globe with some higher education providers banning the technology, and others embracing it (Luo, 2024). Regardless of the view, GenAI is now here to stay and new ways of embedding it into the curriculum are needed, as well as educating students on its ethical use. Whilst not a traditional method of contract cheating, paying for advanced GenAI models is considered contract cheating, especially if the student is going against university policy. This concept only adds extra implications for academic integrity and is currently a priority research agenda in engineering education. A current systematic literature review of the ethical implications of using GenAI (Quince et al, 2024) focusing on academic misconduct has been conducted. Just as fast as academics are creating tools to detect GenAI use, it is adapting. There is no doubt that the models are gaining sophistication, but this will also inspire new assessment and integration. A study on student perceptions using the tool in their study (Quince & Nikolic) showed that students are using GenAI as a tool due to the current limitations however, with the rapid development and advancement this may soon change.

There is currently a growing research field concerning academic security and what traditional methods are still able to be utilised. A recent series of publications showed that in early 2023 ChatGPT was ‘hit and miss’ when it came to passing courses overall and different assessment types (Nikolic et al, 2023). In early 2024, the same research team showed that there were still gaps in GenAI models but they were becoming more advanced (Nikolic et al, 2024). Whilst GenAI poses a serious threat to academic miscount, in both the traditional ‘cheating’ and paid cheating methods there are still considerations that may limit its use. Lack of awareness could lead to

students not utilising the tool and the lack of assurance of a specific grade range, both conditions providing some potential relief in academic institutions. Ethical considerations can stop students from using the tool, however, this point is moot if they are willing to partake in contract cheating. Finally, the risk of detection is currently at the forefront of academia, as such students may veer away from using GenAI and return to traditional contract cheating models. Regardless of the tools of use, contract cheating will always be a part of academic practice.

Conclusions and Recommendations

Addressing contract cheating requires a multifaceted approach. Educational interventions, such as promoting academic integrity through coursework and workshops, have shown some efficacy in reducing contract cheating incidents (Rundle & Campbell, 2020). Creating a culture of academic honesty and emphasizing the value of learning over grades can also influence student behaviour (Bretag et al., 2019). We found with the surveyed cohort that the main drivers for motivation to cheat are poor time management and low self-efficacy, however we noted that fear (of failure) is not a direct motivator for cheating, and that students generally value higher education in both transformative and transactional ways. We found slight influence from cultural background and financial dependency in the international cohort and/or those who grew up outside of Australia. We did not find ease of access and low cost increased the appeal of contract cheating. There was a small cohort who may consider engaging in contract cheating services despite knowing that it is unacceptable and in breach of university policy. With the continuous improvement of generative AI capabilities, we see some reprisal in occurrences of contract cheating as professional service providers have seen revenue dive and are forced to evolve in their bid to feed the needs and fears of our students.

References

Ahsan, K., Akbar, S., & Kam, B. (2022). Contract cheating in higher education: a systematic literature review and future research agenda. *Assessment & Evaluation in Higher Education*, *47(4),* 523-539. https://doi.org/10.1080/02602938.2021.1931660

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological review,* 84(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Bretag, T., Harper, R., Burton, M., Ellis, C., Newton, P., Rozenberg, P., Saddiqui, S. & van Haeringen, K. (2019a). Contract cheating: A survey of Australian university students. *Studies in higher education, 44(11),* 1837-1856. https://doi.org/10.1080/03075079.2018.1462788

Bretag, T., Harper, R., Burton, M., Ellis, C., Newton, P., van Haeringen, K., Saddiqui, S. & Rozenberg, P. (2019b). Contract cheating and assessment design: exploring the relationship. *Assessment & Evaluation in Higher Education, 44(5),* 676-691. https://doi.org/10.1080/02602938.2018.1527892

Clarke, R. & Lancaster, T. (2006). Eliminating the successor to plagiarism? Identifying the usage of contract cheating sites. In *Proceedings of 2nd International Plagiarism Conference*. https://marketing-porg-statamic-assets-us-west-2.s3-us-west-2.amazonaws.com/main/Clarke2_fullpaper2006.pdf

Clarke, R., & Lancaster, T. (2007, July). Establishing a systematic six-stage process for detecting contract cheating. In *2007 2nd International conference on pervasive computing and applications* (pp. 342-347). IEEE. DOI: 10.1109/ICPCA.2007.4365466. https://ieeexplore.ieee.org/document/4365466

Clarke, R. & Lancaster, T. (2013). Commercial aspects of contract cheating. In *Proceedings of the 18th ACM conference on Innovation and technology in computer science education* (pp. 219-224). ACM. https://doi.org/10.1145/2462476.2462497

D'Souza, D., Hamilton, M. & Harris, M. C. (2007). Software development marketplaces: implications for plagiarism. In *Proceedings of the ninth Australasian conference on Computing education*. Vol 66 (pp. 27-33). Australian Computer Society, Inc. https://crpit.scem.westernsydney.edu.au/confpapers/CRPITV66DSouza.pdf

Harper, R., Bretag, T., & Rundle, K. (2021). Detecting contract cheating: examining the role of assessment type. *Higher Education Research & Development, 40(2),* 263-278. https://doi.org/10.1080/07294360.2020.1724899

Jenkins, T. & Helmore, S. (2006). Coursework for cash: the threat from on-line plagiarism. In *Proceedings of the 7th Annual Conference of the Higher Education Academy Network for Information and Computer Sciences* (pp. 121-126).

Kong, E., Goh, S. C. N., Gussen, B. F., Turner, J., & Abawi, L. A. (2016). Strategies on Addressing Contract Cheating: A Case Study from an Australian. *Handbook of Research on Academic Misconduct in Higher Education* (pp. 206-22).

Lancaster, T., & Clarke, R. (2008). The phenomena of contract cheating. In *Student plagiarism in an online world: Problems and solutions* (pp. 144-159). IGI Global.

Lancaster, T. & Clarke, R. (2007a). The phenomena of contract cheating. In *Student plagiarism in an online world: Problems and solutions* (pp. 144-158).

Lancaster, T. & Clarke, R. (2007b). Assessing contract cheating through auction sites–a computing perspective. In *Proceedings of 8th Annual Conference for Information and Computer Sciences*.

Lancaster, T., & Clarke, R. (2012, April). Dealing with contract cheating: a question of attribution. In *Proceedings of 1st annual Higher Education Academy conference in science, technology, engineering and mathematics*.

Lancaster, T. & Clarke, R. (2015). Contract Cheating: The Outsourcing of Assessed Student Work in Bretag (ed), *Handbook of Academic Integrity* (pp. 639-654). Springer. https://link.springer.com/referenceworkentry/10.1007/978-981-287-098-8_17

Luo, J. (2024). A critical review of GenAI policies in higher education assessment: A call to reconsider the "originality" of students' work. *Assessment & Evaluation in Higher Education* (pp. 1-14). https://doi.org/10.1080/02602938.2024.2309963

Mahmood, Z. (2009). Contract cheating: a new phenomenon in cyber-plagiarism. *Communications of the IBIMA,* 10(12), 93-97. https://ibimapublishing.com/articles/CIBIMA/2009/993039/

Mahmood, Z. (2009). Students' understanding of plagiarism and collusion and recommendations for academics. *WSEAS Transactions on Information science and applications*, (8). http://www.wseas.us/e-library/transactions/information/2009/29-504.pdf

Newton, P. M. (2018). How common is commercial contract cheating in higher education and is it increasing? A systematic review. *In Frontiers in Education,* Vol. 3, p. 67. Frontiers Media SA. https://doi.org/10.3389/feduc.2018.00067

Nikolic, S., Daniel, S., Haque, R., Belkina, M., Hassan, G.M., Grundy, S., Lyden, S., Neal, P. & Sandison, C. (2023). ChatGPT versus engineering education assessment: a multidisciplinary and multi-institutional benchmarking and analysis of this generative artificial intelligence tool to investigate assessment integrity." *European Journal of Engineering Education,* 48(4), 559-614. https://doi.org/10.1080/03043797.2023.2213169

Nikolic, Sasha, Carolyn Sandison, Rezwanul Haque, Scott Daniel, Sarah Grundy, Marina Belkina, Sarah Lyden, Ghulam M. Hassan, and Peter Neal. "ChatGPT, Copilot, Gemini, SciSpace and Wolfram versus higher education assessments: an updated multi-institutional study of the academic integrity impacts of Generative Artificial Intelligence (GenAI) on assessment, teaching and learning in engineering." *Australasian Journal of Engineering Education* (2024): 1-28. https://doi.org/10.1080/22054952.2024.2372154

Page, J. S. (2004). Cyber-pseudepigraphy: A New Challenge for Higher Education Policy and Management. *Journal of Higher Education Policy and Management,* 26(3), 429-433. https://doi.org/10.1080/1360080042000290267

Quince, Z., Petkoff, K., Michael, R. N., Daniel, S., Nikolic, S. (2024). The current ethical considerations of using GenAI in engineering education and practice: A systematic literature review. Manuscript submitted for publication.

Quince, Z. & Nikolic, S. (2024). The Social, Economic and Environmental Implications of Using Generative Artificial Intelligence (GenAI): Identifying Student Awareness Gained from Critical-Thinking, Research and Reflective Assessments of Ethically Using ChatGPT. Manuscript submitted for publication.

Rigby, D., Burton, M., Balcombe, K., Bateman, I. & Mulatu, A. (2015). Contract cheating & the market in essays. *Journal of Economic Behavior & Organization, 111,* 23-37. https://doi.org/10.1016/j.jebo.2014.12.019

Rogerson, A. (2014). Detecting the work of essay mills and file swapping sites: some clues they leave behind. 6th International Integrity & Plagiarism Conference: Conference Proceedings (pp. 1-9). Newcastle-on-Tyne: Plagiarismadvice.org. https://ro.uow.edu.au/gsbpapers/434/

Rundle, K., & Campbell, C. (2020). Strengthening the response to contract cheating in higher education: Developing a positive culture of academic integrity. *Higher Education Research & Development, 39(7),* 1467-1481. https://link.springer.com/book/10.1007/978-3-031-12680-2

Walker, M. & Townley, C. (2012). Contract cheating: a new challenge for academic honesty?. *Journal of Academic Ethics, 10(1),* 27-44. https://link.springer.com/article/10.1007/s10805-012-9150-y

Wallace, M. J. & Newton, P. M. (2014). Turnaround time and market capacity in contract cheating. *Educational Studies, 40(2),* 233-236. https://doi.org/10.1080/03055698.2014.889597

Wu, T., He, S., Liu, J., Sun, S., Liu, K., Han, Q. L., & Tang, Y. (2023). A brief overview of ChatGPT: The history, status quo and potential future development. *IEEE/CAA Journal of Automatica Sinica*, *10*(5), 1122-1136. https://doi.org/10.1109/JAS.2023.123618

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